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Docket No. 520.43216X00
Serial No. 10/686,480
August 4, 2008

AMENDMENTS TO THE CLAIMS:

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

LISTING OF CLAIMS:

1. (Cancelled).
2. (Currently amended) The fuel cell assembly of claim 18, wherein said porous member water-retaining layer is made of a hydrophilic polymer material, a carbonaceous porous material, or a composite material thereof.
3. (Previously presented) The fuel cell assembly of claim 18, wherein the thickness of a humidifying water inlet of said humidifier is 1/2 to 3/4 of the thickness of said porous member.
4. (Previously presented) The fuel cell assembly of claim 18, wherein a water permeable membrane having a function to transmit water is formed on porous material of the water-retaining layer.
5. (Original) The fuel cell assembly of claim 4, wherein said water permeable membrane is 0.01 to 0.1 micrometer on a mean micro-pore diameter and 10 to 100 micrometers thick.
6. (Original) The fuel cell assembly of claim 4, wherein said water permeable membrane has a porosity of 50 to 90%.

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7. (Previously presented) The fuel cell assembly of claim 4, wherein said water permeable membrane is one or more membranes that are treated to be hydrophilic and are selected from the group consisting of polytetrafluoroethylene, polystyrene, and copolymers of styrene and butadiene.

8. (Previously presented) The fuel cell assembly of claim 18, wherein the water-retaining layer of said humidifier has a carbonaceous porous filter.

9. and 10. (Cancelled)

11. (Previously presented) A power generation system comprising an apparatus which produces or stores a hydrogen containing gas and a fuel cell assembly connected to said apparatus with a piping through which said fuel gas flows, wherein said fuel cell assembly of claim 18 generates electricity using said fuel gas from said apparatus.

12. (Previously presented) The fuel cell assembly according to claim 24, wherein the water-retaining layer has a mean micro-pore diameter of 10 to 300 μm and a thickness of 50 to 300 μm , whereby water is retained by capillary force by said water-retaining layer when the at least one unit fuel cell is not working and is taken by the at least one of the oxidizing gas and the fuel gas against the capillary force, when the at least one unit fuel cell is working.

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13. (Original) The fuel cell assembly of claim 12, wherein said water-retaining layer has a hydrophilic porous member.

14. – 15. (Cancelled).

16. (Currently amended) The fuel cell assembly of claim 12, wherein said water-retaining layer has a porous member which is provided adjoining said end of the plurality of the fuel cell units and has a water supplying surface to supply water to the flow channels; and water is supplied to the water-retaining layer from only a part of a surface opposite to the water supplying surface of the porous member and/or from the outer edge of said porous member.

17. (Currently amended) A fuel cell assembly including a plurality of unit fuel cells, each unit fuel cell comprising a cathode, an anode, and a membrane electrolyte placed therebetween, wherein said fuel cell assembly further comprises a humidifier adjoining an end of the plurality of unit fuel cells, to humidify a fuel gas which is fed to said anode and an oxidizing gas fed to said cathode; said humidifier has a hydrophilic water-retaining layer which has a mean micro-pore diameter of 10 to 300 μm and a thickness of 50 to 300 μm , and is provided to be in contact with a water permeable layer that faces flow channels of said fuel gas and said oxidizing gas and has one surface to supply water to said flow channels, whereby water is retained by capillary force by said water-retaining layer when the at least one fuel cell is not working and is taken by gas fed to said anode and gas fed to said cathode against the capillary force when the at least one unit fuel cell is working; and water

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is supplied from only a part of a surface opposite to the water supplying surface and/or from the outer edge of said water-retaining layer.

18. (Currently amended) A fuel cell assembly comprising: a stack of unit fuel cells each having a cathode, an anode and the fuel cell assembly further comprising a membrane electrolyte sandwiched between the cathode and anode, and a humidifier, connected to one end of the stack, for humidifying fuel gas fed to the anode and oxidizing gas fed to the cathode,

wherein a water-retaining layer of the humidifier is disposed to adjoin a water permeable layer that faces gas flow channels of the stack to humidify at least one of the fuel gas and oxidizing gas and the membrane electrolyte, the water-retaining layer being made of a hydrophilic porous member having a mean micro-pore diameter of 10 to 300 μm and a thickness of 50 to 300 μm , whereby water is retained by capillary force by said water-retaining layer when the stack of unit fuel cells is not working and is taken by gas fed to said anode and gas fed to said cathode by means of said water permeable layer against the capillary force when the stack of unit fuel cells is working, said water-retaining layer being communicated with a channel containing water by means only of a porous humidifying water inlet means.

19. (Currently amended) The fuel cell assembly according to claim 18, wherein water retained in the water-retaining layer is supplied to said flow channels through the water permeable layer from one of (a) only a part of a surface of the water permeable layer opposed to the surface of the water permeable layer from which

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water is supplied to the gas flow channels and (b) the outer periphery of said porous member.

20. (Previously presented) The fuel cell assembly according to claim 18, having at least two water retaining layers.

21. (Previously presented) The fuel cell assembly according to claim 8, wherein said carbonaceous porous filter controls flow rate of water to the water-retaining layer.

22. (Currently amended) A fuel cell assembly including a plurality of unit fuel cells, each unit fuel cell comprising a cathode, an anode, a membrane electrolyte placed therebetween, and the fuel cell assembly further comprising a humidifier, adjoining an end of the plurality of unit fuel cells, wherein said humidifier, which humidifies oxidizing gas, is equipped with a water-retaining layer in contact with a water permeable layer that adjoins gas flow channels, and wherein said water-retaining layer is 10 to 300 micrometers on a mean micro-pore diameter and has a thickness of 50 to 300 μ m, whereby water is retained by capillary force by said water-retaining layer when the plurality of unit fuel cells is not working and is taken by the oxidizing gas against the capillary force by means of said water permeable layer when the plurality of unit fuel cells is working, said water-retaining layer being communicated with a channel containing water by means only of a porous humidifying water inlet means.

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23. (Previously presented) The fuel cell assembly according to claim 22, wherein said water-retaining layer is a polypropylene non-woven cloth or a polyethylene-polypropylene non-woven cloth that is made hydrophilic.

24. (Currently amended) A fuel cell assembly comprising a humidifier and a plurality of fuel cell units, wherein each of the fuel cell units comprises an electrolyte membrane, a cathode adjacent to one face of the membrane, an anode adjacent to the other face of the membrane, a gas diffusion layer adjacent to the cathode, a gas diffusion layer adjacent to the anode, a separator having a flow channel on one face thereof for flowing oxidizing gas, which is adjacent to the cathode, and a separator having a flow channel for flowing fuel gas, which is adjacent to the anode, wherein the humidifier comprises a porous water-retaining layer having a mean micro-pore diameter of 10 to 300 μm for retaining water supplied thereinto, and wherein the humidifier adjoins an end of the plurality of the fuel cell units in such a relation that the water-retaining layer faces a water permeable layer that faces the flow channels thereby to transfer water by means of said water permeable layer introduced into the water-retaining layer to the fuel gas and/or oxidizing gas flowing in the flow channels, said water-retaining layer being communicated with a channel containing water by means only of a porous humidifying water inlet means.

25. (Previously presented) The fuel cell assembly according to claim 24, wherein the humidifier further comprises a water permeable membrane located adjacent to the end of the plurality of fuel cell units and between the plurality of fuel cell units and the water-retaining layer.

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26. and 27. (Cancelled).
28. (Previously presented) The fuel cell assembly according to claim 24, wherein the water-retaining layer is in contact with water in a cooling water channel.
29. (Previously presented) The fuel cell assembly according to claim 25 wherein the water-retaining layer takes water thereinto at a peripheral portion thereof, where the water-retaining layer is in contact with cooling water.
30. (Previously presented) The fuel cell assembly according to claim 24, wherein the water-retaining layer is made of a hydrophilic polymer material.
31. (Previously presented) The fuel cell assembly according to claim 24, wherein the water-retaining layer takes water thereinto at a peripheral portion thereof, where the water-retaining layer is in contact with cooling water.
32. (Previously presented) The fuel cell assembly according to claim 24, said fuel cell assembly having a single humidifier.
33. (Currently amended) A fuel cell assembly comprising a humidifier and a plurality of fuel cell units, wherein each of the fuel cell units comprises an electrolyte membrane, a cathode adjacent to one face of the membrane, an anode adjacent to the other face of the membrane, a gas diffusion layer adjacent to the cathode, a gas

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diffusion layer adjacent to the anode, a separator having a flow channel on one face thereof for flowing oxidizing gas, which is adjacent to the cathode, and a separator having a flow channel for flowing fuel gas, which is adjacent to the anode, wherein the humidifier comprises a porous water-retaining layer for retaining water supplied thereinto, said porous water-retaining layer being in ~~contact~~ communication with a channel containing water by way of a filter, wherein the water-retaining layer communicates with ~~a~~ the channel containing water only by way of the filter, which is disposed at a position where the cooling water inlet and the water-retaining layer ~~are~~ in contact communicate with each other, and wherein the humidifier adjoins an end of the plurality of the fuel cell units in such a relation that the water-retaining layer faces the flow channels thereby to transfer water introduced into the water-retaining layer to the fuel gas and/or oxidizing gas flowing in the flow channels.

34. - 37. (Cancelled)

38. (Previously presented) The fuel cell assembly according to claim 33, wherein the water-retaining layer is made of a hydrophilic polymer material.

39. (Previously presented) The fuel cell assembly according to claim 33, wherein the water-retaining layer takes water thereinto at a peripheral portion thereof, where the water-retaining layer is in contact with cooling water.

40. (Previously presented) The fuel cell assembly according to claim 33, said fuel cell assembly having a single humidifier.

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41. (Previously presented) The fuel cell assembly according to claim 18, wherein the water-retaining layer comprises a hydrogen oxidation catalyst dispersed in a porous member.
42. (Previously presented) The fuel cell assembly according to claim 22, wherein the water-retaining layer comprises a hydrogen oxidation catalyst dispersed in a porous member.
43. (Previously presented) The fuel cell assembly according to claim 24, wherein the water-retaining layer comprises a hydrogen oxidation catalyst dispersed in a porous member.
44. (Previously presented) The fuel cell assembly according to claim 33, wherein the water-retaining layer comprises a hydrogen oxidation catalyst dispersed in a porous member.
45. (New) The fuel cell assembly according to claim 18, wherein said porous humidifying water inlet means is a humidifying water inlet.
46. (New) The fuel cell assembly according to claim 18, wherein said porous humidifying water inlet means is a porous carbonaceous filter.